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# ADDRESS

OF

M. F. MAURY, LL.D.,

BEFORE THE

National Agricultural Congress,

AT ITS MEETING IN ST. LOUIS,

MAY, 1872.

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# ADDRESS BEFORE THE NATIONAL AGRICULTURAL CONGRESS,

AT ITS MEETING IN ST. LOUIS, MAY, 1872.

By M. F. MAURY, LL.D.

LAST October, before the Agricultural and Mechanical Society of Rockbridge County, Virginia, and of Shelby County, Tennessee, I explained the objects of an international conference to be held among the leading agriculturalists and meteorologists of different countries. I pointed out several of the many vast benefits likely to flow from *earnest* co-operation between those engaged in these two branches—the one of industry, the other of science—and showed that progress and improvement here (more than elsewhere) touch the prosperity of nations and the welfare of the whole human family. As an argument in favor of that object, I refer to that address.

## PREDICTING THE SEASONS.

“Man is by nature a meteorologist;” and what are his crops but the resultants of meteorological laws and influences that have acted upon them during their growth? Now, seeing the great increase of knowledge gained within the last eighteen or twenty years as to the working of the atmospherical machinery of our planet, and of the agents that control the weather; and bearing in mind that this increase is in no small degree due to the impulse which the maritime conference at Brussels gave to meteorological research, who shall say that the coming meteorologist may not, under this system, be enabled to forecast the weather and the seasons for the farmer as well as the storm and tempest for the mariner?

Only conceive the means and facilities and appliances this plan will afford him. He will have co-operators on the land as well as on the sea, all observing, at fixed hours, with standard instruments, after the same method, each one reporting his observations for discussion to the principal office in his own country, and each principal office communicating by telegraph to all the others, the results obtained, and each government disseminating them over its own domains, by telegraph, press, and mail.

## TOO BIG FOR ANY NATION TO UNDERTAKE ALONE.

Gentlemen, this is a vast subject; it is world-wide in its bearings. It is the grandest scheme, for it opens the widest field for physical research and the encouragement of industry, that philosophers have ever been invited to enter. No nation can occupy it alone, or gather with its own laborers a tithe of the harvest that is there waiting for the sickle, and looking as invitingly to the philosopher as fields of yellow corn ever did to the reaper.

## THOSE THAT ARE ALREADY IN A CONDITION TO CO-OPERATE.

Japan, India, China, and Turkey, with all the States of Christendom, have already within their borders the steamboat, the railway, and the telegraph. Nearly all of them have also their system of meteorological observations and crop reports—this is the very machinery that this proposition requires. We now want to gear it together; and to do that, it is only necessary for the general government to step forward with its friendly offices, issue its invitations, and prevail upon other nations to unite with this country, and assist in carrying the plan into effect.

An immense corps of observers is already at work in this field, both ashore and afloat, and to bring them into co-operation and utilize their labors, all that is necessary is not money, but simply an appeal from the right quarter, asking them to unite with us in such plan as may be agreed upon in common council. The results are to be beneficial alike to all.

## THE ATMOSPHERICAL MACHINERY—HOW KEPT IN MOTION.

Did it ever occur to you to think of the atmosphere as a great ocean, that covers sea and land to the depths of many miles?—That we creep and crawl along at the bottom of this ocean, where reside all those agents whose operations and effects upon the weather and the crops, upon man and his industries, it is the object of this plan to trace?

Now, to trace these operations, and to comprehend the workings of such a grand machine as the atmospherical ocean is, we must have persons here and there, and everywhere—on land and sea—observing and watching, all in the same way, its movements, behavior, and phenomena. The ships of commerce, and of war, that, under various flags, are constantly afloat, afford, without any additional cost whatever, all the observers that the plan requires for the sea.

All knowledge is profitable; but practically, how vastly more important to the every-day affairs of life, and especially to agriculture, is a knowledge of what is going on, in a physical way, at the bottom of our aerial ocean, than what is going on at the bottom of the aqueous. Still, I can state a fact which should stir you up to action, and that it may do so, I call attention, with pride, and for glorification, to a spectacle that may



now be witnessed on the other side of the Atlantic :—There the greatest maritime power the world ever saw is in homage to science—turning her men-of-war into floating observatories. She is now fitting out a superb frigate for a four years' cruise around the world. This ship is to have on board, as part of her complement, some of the most famous men of science in England. The main object of this expedition is to increase our knowledge concerning the "physical geography of the sea," and to find out what is going on at the bottom of the *deep* sea. As praiseworthy as this is, and noble too, how it dwindles, as to importance, in comparison with this proposition to investigate the bottom of the *high* atmosphere. Consider only a moment the nature of the problem I am propounding, first in its meteorological aspects, and by the light of these facts, viz.:

(1.) Every movement that takes place in the atmosphere, from the zephyr to the tornado, is traceable to the sun. He it is that pumps up from the sea the water for your mighty Mississippi river, transports it through the air, and showers it down upon your glad hills and smiling valleys. (2.) The quantity of heat annually dispensed by him to the earth is a constant. (3.) The dimensions of the ocean are permanent. (4.) The volume of water annually taken up from it as vapor and let down again as rain, hail, snow, and dew is also a constant. (5.) But the quantity of it, that is dispensed to you, year by year, is variable. Now when we come to discover—as this system of research will surely enable us to do—in what parts of the world this precipitation is going on in excess, and in what parts in deficiency, who shall say that we may not be able to forecast the seasons, and to tell the farmer in time for him to profit by the information, when to expect a drouth, when a wet season; whether the next winter is to be mild or severe; whether it is to be such as to favor abundant harvests or short crops?

#### OTHER INDUSTRIES ALSO CONCERNED IN THE PLAN.

Then consider the problem in some other of its industrial and agricultural aspects. I say *industrial* as well as agricultural, for I know of no occupation, whether it be in the field, in the forest, or the factory, whether it be with tillage or pasturage, in the mine, the mill, or on the sea, that does not depend, in a greater or less degree, for its prosperity upon the seasons and the weather, and in such a manner that foreknowledge would, many a time, prevent losses and oftentimes make gains.

Of what *practical* use is it, let me ask you, to know that your neighbor's crops are flourishing, or that there is a short harvest in one of the adjoining States? The price of grain in the great food markets of the country—as this city, Chicago, and New York—is not regulated by the wheat harvest only in Ohio or Pennsylvania. It is rather regulated by the price of grain in England, which in turn is regulated by the harvest-yield in all countries whence England and Europe derive their food supplies. Now, this plan aims by simple and inexpensive means to keep every farmer in the land posted up with the promise as well as the yield of the crops in all countries, in the basin of the Black Sea as well as in the valley of the Mississippi.

#### ADVANTAGES TO BE GAINED.

To show the advantages of such knowledge is like attempting to prove a self-evident proposition. But that you may be able to appreciate them, at least in part, let us look into the past a little way, and see what the farmer has gained as he has ranged up alongside of the merchant, in knowledge, even as to prices alone.

Many here present can remember (for it was only about fifty years ago) when their way to market was in "broad horns" and keel boats down the Mississippi to New Orleans, and how, when they shipped their crop to market, they had no idea as to the price they were to get for it. After that the steamboat came, and then when the farmer shipped his crop, though he did not have so much more light as to price, he was not quite so much in the dark, for when a rise took place in New Orleans he could be in the market there in the course of a week or ten days, instead of after a lapse of a month or two. That knowledge was felt to be a great gain. They can also remember well when there were neither railway, steamship, nor telegraph, and when communication with the "old world" was by sailing packets, with an average passage of thirty-two days from Liverpool; and they remember also, when a rise there in one of our staples took place, how agents and couriers—riding day and night, and outstripping the mails—used to come among them, concealing all knowledge of the rise, and buying sometimes even at half-price, when, if you had been on a footing with the merchants as to knowledge, you would have got double money for your corn.

\* The last achievement I have heard of in this way, was a few years ago. It was based on the fall of Richmond. There was then a telegraph to Nova Scotia, but none thence across the Atlantic. A party in New York chartered, in anticipation of that disaster, a swift steamer, and quietly sent her with private letters and dispatches to Halifax, where she was to keep up steam, night and day, and await orders. Finally Richmond fell, and thereupon the word "go" flashed through the wires to Halifax, and off went the swift-footed steamer. She was ahead of all others, and upon that word "go" the party is said to have realized millions of dollars, and all because one party knew more about the articles dealt in than the other.

## WHAT STEAM AND THE TELEGRAPH HAVE ALREADY DONE.

Though steam and the telegraph have done much for the producer, by placing him more nearly on a footing with the buyers in knowledge as to supply, and by shielding him from the speculator, they have left much yet to be done in order to place him and the merchant on the same platform. The English merchant especially, from the commanding situation in which the commercial eminence of his country has placed him, is in a position to learn and to know, far more accurately than any farmer can estimate, the crop prospects for every agricultural staple that comes to the realm in search of a market. His correspondents in this country—but not the farmers—are, when necessary, posted up by daily telegrams with this information. And in whose interests is it used? Is it in the interest of the producer and the seller, or of the buyer and the merchant? Clearly not in your interest. This system will keep you all posted up much better than any merchant now is.

## WHAT THE INTERNATIONAL CONFERENCE WILL DO.

Only give us this conference and this plan. It will make the source of information for the farmer the same that it is for the merchant, and make even the farmer who is living in the log cabin of the far West just as well acquainted as are the brokers on the corn exchange in London, with the promise, yield, and prices in all countries which compete with him in the market. This information will be full, fair, and impartial, and not in the interest of the buyer more than the seller, and will be far more reliable and complete than either party now has.

To lift you up from under the heels of the speculator, and to place merchant, producer and consumer, planter and factor, side by side in this knowledge, is surely a noble aim. The results for good and the outflowing benefits are beyond the powers of pounds sterling or golden eagles to express. It will confer a boon upon agriculture not to

## BE EXCEEDED IN VALUE BY THE CONGRESSIONAL LAND GRANTS.

There is no one who appreciates more highly than I do the advantages of agricultural education, or who, confining his expectations within the limits of reason, anticipates from those magnificent land grants of Congress for agricultural and mechanical schools and colleges greater good to the farming interests than I do. But let that good be whatever it may, it is not to outtop the good that is to flow from this joint system of crop reports and meteorological research.

## RECEIVED WITH FAVOR.

The progress made with the proposition both in this country and abroad is, so far, very encouraging. In all great moves like this, first the people and then their government have to be educated up to it. It was not until the middle of October last that this "ball" was put in motion. Then the agricultural and mechanical societies in most parts of the country had held their annual fairs, and adjourned over to next fall. It was too late, therefore, to bring the subject up before them. Nevertheless, it has been received with favor everywhere, both in Europe and this country, wherever it has been fairly presented and properly understood.

The Scottish Meteorological Society, which itself is most active and which has for its secretary Alexander Buchan—the most eminent meteorologist in Great Britain—has signified its readiness, as soon as we say the word, to move in the matter there, and to put itself in communication with the meteorological and agricultural societies of the realm, with the view, when the invitation comes from Washington, of bringing a pressure (if need be) upon the English government in favor of acceptance.

Commodore Jansen—the foremost man in Holland—is our advocate there.

In Belgium, we have in our favor, with his large influence, the excellent Quetelet, Astronomer Royal of the Kingdom and perpetual secretary of the Academy of Sciences in Brussels. He has taken the lead, and done more than any man living for vegetable climatology, and is therefore eminently qualified to appreciate this move. He was president of the Brussels Conference of '53, and went with us then in favor of a pan-national system of meteorological observations and research for the land as well as the sea. The King of the Belgians and his Minister have had their attention called to the subject. They both express a lively interest in it.

The last mail from France brings encouragement from Marie Davy, the meteorologist and savant. He, with Zurcher and Margolle—themselves, also, men of eminence, and the friends of all true progress in science and industry—are "rolling this ball along" there like good fellows. They are bringing it to notice in proper quarters, and translating the Memphis address for the Agricultural Society of France. *Le Messager de Paris*, an influential journal in that country, comes out most earnestly in support of the plan.

Father Secchi, of the Collegio Romano, one of the greatest physicists of the age, is ready to co-operate with us. I have not heard from him, but I know the man, and can tell exactly where he is to be found in such a cause as this.

Russia, too—she owns one-seventh of all the land in the world. She is renowned for the encouragement which, through her Kupffer and others, she has bestowed upon meteorological observations and research. She has her empire already dotted with stations. She, through her enlightened prince, scientist, and statesmen, the Grand Duke Constantine, did much to encourage the system of research at sea, as matured in the Brussels Conference of 1853, and such was his interest in the matter, that at the breaking out of the war in 1861, he made princely offers and invited me to the banks of the Neva, there, as the guest of the nation, to continue those physical researches (which had been so rudely broken up at Washington) at the charge of the empire.

In all good works, no nation is more ready to join than Russia, and I count upon Russia in this.

Portugal, Denmark, England, France, Belgium and Holland, with Sweden and Norway, were all with her at Brussels, in the persons of their men of science. Spain, Austria, Prussia, Italy and the Holy See, the Senate of Bremen, with India, Brazil, and South America joined in as helpers and co-operators. Nor were Turkey and Siam indifferent. And I think, gentlemen, that I may go so far as to say that when you, for and on behalf of the agriculturists of America, are prepared to do your duty in this matter, you will find all these great men, wise statesmen, enlightened princes, and powerful nations at your back.

#### PROGRESS ALREADY MADE.

This congress was among the first in this country to catch at this "ball," and it may, I think, reflect with both pride and satisfaction upon the fact.

The Legislatures of a number of States, among them Tennessee, Alabama, Mississippi, Missouri, North Carolina, and Virginia, have passed resolutions instructing their Senators and requesting their representatives in Congress to go for the Conference. Two States, not satisfied with instructing their Congressmen, have gone farther, and actually adopted the plan (as far as they can) by providing for a system of crop reports within their own borders.

Various agricultural societies have passed resolutions in its favor, or recommended it to Congress.

Last February there was a meeting in Washington of representatives from the agricultural societies and colleges of the whole country. There were present at it delegates from all except two or three States of the Union. I am told they gave the plan their hearty approval.

Since then a Senator, who has been instructed by his State, has had a conversation with the Secretary of State upon the subject, to know whether he would go with us and issue invitations to other powers to meet an agriculturist and a scientist from this country in conference, where the details of the system might be arranged in a manner satisfactory to all. But the honorable Secretary has not yet been educated up to this point; he threw cold water upon the plan and referred us to Congress.

The Commissioner of Agriculture was also called on. He pointedly refused to have anything to do with the matter, and, as if to let us know how far he is behind the times, stated that he had just ordered the meteorological reports of his bureau to be discontinued.

This plan is not like an untried experiment. The Brussels conference, though it traversed but a part of the field—and by no means the most promising part—has led to results which, besides increase of knowledge, have had the industrial effect of so shortening sea voyages, that, in this alone, there has been a gain annually for the world's commerce of millions—not of dollars—but of pounds sterling.

But, even in this refusal by high officials, we have gained a point, and therefore made progress—for by it we know who "are *not* for us." The administration has been treated with consideration, and the Secretary of State with the respect and deference due his high place. He shrugs his shoulders and motions us to Congress, and to Congress let us go; not timidly, but boldly; not in the feeble accents of suppliants, but with the majestic voice and loud tones of yeomen, demanding their rights and insisting to be heard in a just and wise, and a great and good cause—(applause).

#### THE INDUSTRIAL INTERESTS APPEALED TO.

The yeomen of the land can do this; for now, for the first time in our history, they find that they can give utterance to their wishes, and speak through their own organs to the lawgivers.

This the National Agricultural Congress of the United States is here to enable them to do. Its aim is to represent and advocate the agricultural interest of the land—not by counties, nor by States, nor by sections—but for the whole country. Such being its objects and aims, there is no subject to be brought before it that is more deserving of its attention than this; none whose success will crown it with such honors and renown, and none more worthy of the aid which great and good men delight to bestow upon praiseworthy objects. I appeal, therefore, not only to this congress for their aid as a society, but to its individual members, to help with their influence, to "roll this ball along." There is work for all; every one can HELP.



## WHO IS TO BE BENEFITED.

Before specifying the steps which I would desire this congress to take in this matter, it may help the cause to state that the success of this scheme will benefit all of you more than it will its projector. I am under the ban of the nation, and can hold no office in it—neither State nor Federal. The moment the government takes hold of it, my connection with it ceases. I cannot share in the honor of helping to organize, or of assisting to carry out. I have no farm, neither do I cultivate a parcel of ground. Therefore, I say, though I advocate this measure so earnestly—devoting to it time that I can ill afford to spare—there is no one in the land who is less to be benefited by its success than I.

Among the steps to be taken I urge this congress:

- (1.) To memorialize the Congress of the United States in favor of the measure.
- (2.) To issue an address to all the agricultural societies, clubs, and associations of the country, State, and county, in furtherance of the plan, inviting their co-operation, and requesting them to memorialize the United States Congress; also, to use their influence with their representatives there in favor of it.
- (3.) A resolution directing the appointment of at least one delegate from each State here represented, with the request and authority to petition in the name of this Congress the Governor and Legislature of his State to lend the move their good offices, and to instruct their Senators and request their Representatives in Congress to support it.
- (4.) That the agricultural journals and the press of the country be requested in the name of this association to give the plan such support in their columns as in their judgment its merits entitles it to receive.
- (5.) A resolution requesting the president of this congress to forward a copy of its proceedings in relation to this subject to the various agricultural, meteorological, and other scientific and industrial societies at home and abroad, asking their friendly consideration of the matter, and their co-operation in the move.
- (6.) That the members of this congress pledge themselves, on their return to their constituents, to exert each his influence among them, and with his representative in the United States Congress, in pressing this subject for public attention and Congressional action.

## WHY A CONFERENCE IS REQUIRED.

In urging a pan-national conference to discuss and set on foot a systematic plan of observations and reports, I may not—because such instrumentality is, to my mind, so very indispensable—have satisfied gentlemen as to its necessity. We want to observe the whole atmosphere, and to note the staple crops in all countries. It will not do, therefore, for any one nation to say to all the rest, "Here is my plan; adopt it."

Each nation is already carrying on its own plan of weather observations, and every one of these plans differs, more or less, from the rest.

We want a conference consisting of wise men from each nation, to harmonize these plans, and to bring them into one.

Almost all the governments of Europe deal more or less with agricultural statistics, but the data as now observed and collected in one country cannot be readily compared with the data of another country, simply because of the difference in the manner and mode of treating them; neither are they always accessible.

The members of the conference, taking counsel together, will be able to see exactly what each government is doing; and how, using the machinery already existing, they may devise a common plan that will involve the least change, the least loss, and the least additional expense, while at the same time it promises the greatest good! Hence the necessity of a conference.

To give a practical illustration of that necessity, the meteorologists may desire to change the present plan of observation, so as to have at least a portion of them to be made synchronously all over the world. For instance, the French may say, let it be established that when the hands of the clock in the Paris observatory point to 12 Om. 0s.—at that *instant*, let the meteorological observers in all parts of the world note their *instruments*, and record the state of the weather as it is with them—and so, as often during the twenty-four hours as the conference shall deem it best to have observations made. The English may, with equal propriety, say the same for their capital. The Americans for theirs, and the Japanese and all other people for theirs. That matter must be adjusted as preliminary to any general system. Whether the conference will recommend synchronous observations I do not pretend to say; but I do mean to say that in the further prosecution of our meteorological researches it is very desirable to have—at stated periods, if not for all the year—synchronous observations all over the world, and such that will show us the state of the atmosphere as it *is* at given moments—not as it *was* at uncertain times.

Then again, in those parts of the world, as in Central Asia, in Africa, and the islands, where native co-operation may not be practicable, and where some one or more of the States in conference may have consuls or agents, or where there may be missionaries or

merchants, a plan for securing their co-operation and furnishing them with proper instruments has to be devised, and an understanding come to as to the disposition to be made of their observations, with the view to their final discussion.

It must be remembered that the bearing of the laws of meteorology upon agriculture has never yet formed the subject of any well-directed effort among nations, or even by individuals on a scale sufficiently comprehensive to develop practical results.

Any sailor can tell you what a systematic plan of observations at sea has done for navigation; and how the resulting knowledge as to the winds and currents of the ocean has shortened voyages, brought remote parts of the world in close proximity, lessened the dangers of the sea, and benefited commerce. But where is the farmer that can tell what meteorology, as a science, has done to agriculture? All he knows concerning the operation of meteorological laws upon his crops is derived chiefly from tradition and his own observations. Small indeed is the mite from systematic research and philosophical deduction that has been vouchsafed to him.

What, then, may we not expect when we come to dot the world with observers, all equipped with standard instruments, watching the weather, noting its signs, all at the same time, after the same plan, with an eye to its bearing, not only upon agriculture, but upon health, disease, malaria, &c., and then sending their observations for discussion to the most eminent philosophers in the various countries of the world?

These and such like subjects must come before the conference for arrangement, and they must be there definitely settled in a manner agreeable to all parties, for without such preliminary settlement the different nations cannot be expected to "pull together."

#### COST.

Each of the co-operating parties will bear the cost only of its own observations and reports. And I suppose this will not be much in addition to their present independent and less efficient plans. Therefore, I can submit no estimate for other countries, nor would I take up your time with them if I could. I would be glad to give them to you for this country, but here I lack the requisite data also. I may repeat what has been already intimated; that with a proper use of the means and appliances already at hand, and such as are to be found in your agricultural bureau in Washington and the meteorological stations and establishments under government control, the additional cost in proportion to the good to come, will not weigh as a straw in the balance.

But, gentlemen, much or little is not the question so far as this country is concerned—its agricultural interest requires whatever may be necessary for its proper encouragement, and you, the advocates, champions, and representatives of that interest, have on your side, right, justice, and the good of the commonwealth. Stand up, therefore, before the government, in your might and demand it.

As to the expenses of the gentlemen to attend the conference, that is too small to talk about. Here, again, the Brussels conference is a lamp to our feet. With no other cost than my travelling expenses to Europe and back, nations were drawn into co-operation, plans were arranged, two-thirds of the earth's surface was occupied, and every man-of-war and merchantman that sails upon the high seas was converted into a physical observatory, the master and mates of each being ready to make observations, day and night, according to a uniform plan, and in all parts of the navigable ocean. The obvious benefits of that system of research and the moral influence of that conference enlisted this co-operation and made it voluntary. I think there is as much public spirit among farmers as among sailors; and that this plan, rightly managed, would be proportionably inexpensive. But, cost what it may, the agricultural interest of the country is, as I shall show, entitled to the expenditure, and when it gets the annual appropriation required for this measure it will not have received anything like its fair share of public favor, in proportion to the encouragement given by the government to commercial and other interests.

In the first place, there is already established a system of meteorological observations, a signal office, and an agricultural bureau. This is so much machinery toward this system, which it may be safely assumed would not, if geared on to it, entail an additional expense greater than that already required for the support of these establishments as they are, and would add to their efficiency.

Mississippi, acting for herself under this proposition, has organized a system of crop reports. It is made the duty of the president of every county board of supervisors to submit reports regularly on the 28th day of each month, to the central office—that of the agricultural journal, the *Field and Factory*, of Jackson. The editors of that journal are required to secure the additional co-operation of at least five intelligent farmers in each county, and to publish results monthly. The total cost of all this, including the gratuitous circulation of 1,500 copies of the monthly report, is \$3,000. There are no meteorological researches connected with the Mississippi system; but I think it shows that the plan I advocated does not involve the gigantic expenditure that some have seemed to think it would. Tennessee has also established her bureau of crop reports with a like appropriation.

## AGRICULTURE ENTITLED TO A FAIR SHARE OF ENCOURAGEMENT.

But to show what strong grounds this association has for pressing this scheme upon the government and the public, let us mention a few facts, leaving it to them to speak for us.

I am moved to bring these eloquent mutes into this presence simply in justice to the cause I plead, and not for the sake of anything like invidious comparison or disparagement. Therefore, without implying that other interests are protected too much or too little, let us inquire what they get from the government, that we may see whether agriculture gets its fair share.

Agriculture is taxed directly for the benefit of them all, for as agriculture is the main stay and prop of the country, all the other interests that receive support from the government derive that support, first or last, from agriculture; and the most the government has done for agriculture may be seen in the Agricultural Bureau and the land grants for teaching agriculture and the mechanical arts.

### WHAT IS DONE FOR COMMERCE.

First, there is the expense of surveying and lighting the coasts; of supporting the consular system; the expense of maintaining fleets and squadrons in all quarters of the globe in times of peace. Heavy items these; and now there is, or was, a bill before Congress for encouraging—by bounties and special legislation—ship-building; all of which involves a public expenditure of some \$20,000,000 or \$30,000,000 a year. And yet the wealth that the nation gains from commerce is not a tithe of that which agriculture gives it annually. The difference in value of what is sent out and what is brought back into the country is the wealth that commerce gives. What agriculture gives is the market value of her yearly crops, estimated at \$2,000,000,000 for last year.

Then there are the fishing bounties. The annual appropriation for them would be more than sufficient to put and keep in operation this plan of research. Besides all this, there is the signal office, which was established entirely in the interest of commerce. It aims to predict storms, and hoists its storm-signals in the shipping ports and marts of commerce, but not in the inland towns and agricultural centres.

Moreover, a bill is now, or was, pending before Congress calling for \$200,000 for carrying a submarine cable 300 miles out to sea, to a steamer there to be anchored, to serve as a storm-ship in connection with this bureau. The steamer will cost quite as much as the cable. Should this experiment prove satisfactory, the plan is to ascertain the coast with like meteorological outposts. All this for commerce and navigation.

Surely our requests are moderate, and the more so as we seek to utilize all this machinery for the farmer, and aim to bring this bureau into the service, also, of agriculture and other interests on the land; and, without interfering with its present duties, to make it as useful to the farmer as it is to the sailor, and to enlarge its powers for good to both. (Congress has since so ordered.)

The signal office or bureau was got up last year with an appropriation of \$25,000, especially for the benefit of lake meteorology and navigation; and to carry it on for another year an appropriation of ten times that amount is asked for and recommended by the committee in Congress. Instruct your Representative there to adopt this plan; to go for an act making that establishment and the agricultural bureau co-operative offices; and then this appropriation will have a double value, and be made as beneficial to agriculture as to commerce; and its telegraphic outposts on the Atlantic will watch in the interests of the farmer as well as the sailor.

### PROBABLE RESULTS.

I estimate the benefits to be conferred upon agriculture alone, by this comprehensive system of research, to be worth annually to the country quite as much as all the gains of commerce. It is also bountiful with promise of good to all industrial pursuits, whatever their nature. It bids fair to afford data—if scientists have the faculty of successful discussion—for forecasting the weather, and predicting for considerable periods in advance those general changes in it which most concern the husbandman. With the means and appliances which discovery and improvement have placed at the command of nations, success with such predictions seems more than probable.

I ask any farmer to tell me, if he can, what such success—though achieved only a few times during the year—would be worth to him? It may be worth tens, or hundreds, or thousands of dollars, according to circumstances. We cannot say. But we *can* say that, in the aggregate, and for the whole country, only a few days foreknowledge of the weather, at particular stages of the crops, would be worth millions. I do not pretend to pledge this congress or myself for such results; it would be like pledging the child for the man; but I regard them not only as not improbable, but such as any meteorologist might reasonably expect to flow from such a comprehensive system of research, wisely organized and properly conducted.

Then the benefits that are to ensue, both to producer and consumer, by placing them on a footing with the middlemen, as to the state of the crops any month of the year, and



all over the world. Why, gentlemen, I tell you there are margins here on your side for saving and gaining such as no plan of physical and statistical research ever comprehended. Will you press it upon Congress? You, that represent the agricultural interests, and are the farmers of the country, have but to speak the word, and, so far as this people is concerned, it is done.

## RESOLUTIONS ON THE ADDRESS.

The order of business was laid aside for a moment, to receive the report of the committee on the address of Com. Maury.

The report was presented by Gen. Jackson, of Tennessee, who stated that it was in the shape of a series of resolutions which the committee deemed advisable to offer, looking to a furtherance of the plan, devising means, as it were, for carrying this plan into effect. It is as follows:

(1.) *Resolved*, That the attention of the general government be and is hereby respectfully invited to this subject as one of national magnitude, and that the Congress of the United States be and is hereby most earnestly requested, in the name of the association, and in behalf of the yeomen of the country, to adopt such measures as in their wisdom they may deem best calculated to secure the meeting in general conference at an early day of one or more leading agricultural and leading scientists from each country in the family of nations, the object of such meeting being to perfect the arrangements proper and necessary for carrying out the plan proposed by Com. Maury for an international and general system of crop reports and meteorological research, and that copies of his address and this resolution, with the proceedings under them, be sent by the President of this Association to the President of the United States Senate, and to the Speaker of the House of Representatives, with the request that the same be laid before their respective houses for action, and that copies also be sent to the President of the United States and to the Secretary of State and of the Interior, requesting them to encourage and promote the measure by their official action.

*Whereas*, A combined system of weather and crop reports, if inaugurated and carried out in the manner proposed in the address which we have just heard, would, in the opinion of this association, tend greatly to benefit the industrial pursuits of this country, commercial and manufacturing as well as agricultural, and would also increase the prosperity of this nation and add to its glory and renown.

*Whereas*, The agricultural interest is the chief interest to be subserved by the measure, and the farmers have influence enough, if they exert it, upon their members of Congress to carry it; therefore be it

(2.) *Resolved*, That the president of this congress is hereby authorized and requested to raise a committee for each individual State in the Union, to consist of one member from each State, whose duty it shall be to exert himself, each in its own State, in favor of Com. Maury's plan by correspondence, by circulating their proceedings, and by petitions and memorials to the legislatures of such States in favor of such resolutions, and instructing their Senators and requesting their Representatives in Congress to procure the necessary legislation for a joint system of agricultural and meteorological observations and reports.

(3.) *Resolved*, That this congress hereby appeal to every society, club, and association, agricultural or mechanical, in behalf of this great move. We recommend it to their favorable consideration. We earnestly solicit their active co-operation, and invite them to use their friendly influences in furtherance of the measure, by sending memorials and petitions to Congress, and in such other modes as to them may seem good.

(4.) *Resolved*, That the agricultural journals of the country, and all newspapers friendly to the advancement of science or the encouragement of agriculture, be requested to take note of these proceedings, and to give them such a second as the importance of the object they have in view may seem to deserve.

(5.) *Resolved*, That the President of this Congress cause copies of Com. Maury's address, and of the proceedings under it, to be sent to the various agricultural, meteorological, and other scientific and industrial societies in the various countries of the world, asking their consideration of the same and inviting their co-operation in furtherance of the object in view.

(6.) *Resolved*, That the President forward a copy of these proceedings, and of Com. Maury's address, to the Statistical Congress to assemble next August in St. Petersburg, Russia, with a communication stating the object and aims of this congress, tendering its good will and friendly offices, and inviting reciprocal co-operation in matters that may be common between them.

(7.) *Resolved*, That 20,000 copies of Com. Maury's address, and the proceedings under it, be printed for gratuitous circulation, and that a committee of three be appointed to raise the funds necessary for printing and circulating the same, and the following named gentlemen are suggested: Arthur B. Barrett, Lee R. Shyrock, and J. S. Marmaduke, of St. Louis.





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